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## **"Sports Board"**

### **Field of the Invention**

The present invention relates to a sports board having an interchangeable edge section. The invention has been devised in particular, though not solely, in respect of a surfboard having an interchangeable tail section. Throughout this specification, the term "sports board" will be understood to refer to any leisure device designed to travel across a surface, including, but not limited to, a surfboard, sailboard, wakeboard, snowboard, kite-surfing board, sky-surfing board and wave ski.

### **10 Background**

In the case of a surfboard (as a particular example of a sports board), the performance characteristics of the surfboard such as responsiveness, speed, buoyancy and turning circle, may depend on several parameters, including the density of the material from which that board is made, the size of the board, the active surface area, and the shape of the board. In terms of shape, the portions of the board which can generally have a profound influence on the performance characteristics can include the nose, rails and tail.

It is desirable to be able to vary the performance characteristics of a sports board, according to the skill and experience of the user and/or the conditions.

### **20 Disclosure of the Invention**

Accordingly, the invention resides in a sports board having a body and an interchangeable edge section, the sports board comprising a main portion and an edge portion, the edge portion being separable from the main portion, the edge portion being engageable with the main portion to prevent relative movement between the edge portion and the body when engaged, the interengagement being able to withstand the forces anticipated to be exerted between the edge portion and main portion during use of the sports board.

According to a preferred feature of the invention, the edge portions are configured to extend along at least a portion of the edge of the main portion.

According to a preferred feature of the invention, a plurality of edge portions are each engageable with the main portion to provide a capacity for a variation in  
5 shape for the sports board.

According to a preferred feature of the invention, the interengagement between the edge portion and the main portion comprises a first engagement portion provided on the edge portion, and a second engagement portion provided on the main portion, the first and second engagement portions being capable of said  
10 interengagement and a fastening means between the edge portion and the main portion, said fastening means being adapted to retain the first and second engagement portions in said interengagement.

According to a preferred feature of the invention, the engagement portions extend along the lengths of abutting faces between the edge portion and the  
15 main portion.

According to a preferred feature of the invention, the abutting faces of the engagement portions have complementary non-linear transverse profiles which, when interengaged, will resist relative transverse movement between the edge portion and the main portion. According to one embodiment, the abutting faces  
20 have a tongue and groove-like configuration. According to a preferred feature of the invention, the abutting faces of the engagement portions have complementary non-linear profiles along the faces which, when interengaged, will resist relative longitudinal movement between the edge portion and the main portion.

25 According to a preferred feature of the invention, the engagement portions are formed as an integral part of the respective edge portion and main portion.

According to a preferred feature of the invention, the engagement portions are formed as separate elements which are incorporated into the respective edge

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portion and main portion during formation of the main portion and the edge portion to provide the abutting faces at the interconnection therebetween.

According to a preferred feature of the invention, the fastening means is located in the region of said interengagement. According to a preferred feature of the invention, the interengageable faces of the engagement portions are formed at  
5 least in part to provide the fastening means. According to a preferred feature of the invention, the fastening means comprises retaining means provided between the engagement portions. According to a further preferred feature of the invention, the retaining means comprises a plurality of spaced retaining means

10 According to one embodiment, the edge portion comprises a nose section of the sports board. According to an alternative embodiment, the edge portion comprises a pair of opposed rail sections of the sports board. According to one embodiment, the edge portion comprises a tail section of the sports board.

According to a further aspect the invention resides in a surfboard having a body  
15 and an interchangeable edge section, the surfboard comprising a main portion and a tail portion, the tail portion being separable from the main portion, the tail portion being engageable with the main portion to prevent relative movement between the edge portion and the main portion when engaged, the interengagement being able to withstand the forces anticipated to be exerted  
20 between the tail portion and main portion during use of the surfboard.

According to a preferred feature of the invention, the tail portion is configured to extend around the rear edge of the main portion.

According to a preferred feature of the invention, a plurality of tail portions are each engageable with the main portion to be interchangeable to provide a  
25 capacity for a variation in shape of the tail of the surfboard.

According to a preferred feature of the invention the interengagement between the tail portion and the main portion comprises a first engagement portion provided on the tail portion, and a second engagement portion provided on the

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main portion, the first and second engagement portions being capable of said interengagement and a fastening means between the tail portion and the main portion, said fastening means being adapted to retain the first and second engagement portions in said interengagement.

- 5 According to a preferred feature of the invention, the engagement portions extend along the lengths of abutting faces between the tail portion and the main portion when interengaged.

- According to a preferred feature of the invention, the abutting faces of the engagement portions have complementary, non-linear transverse profile which, when interengaged, will resist relative transverse movement between the tail portion and the main portion. According to one embodiment, the abutting faces have a tongue and groove-like configuration. According to a preferred feature of the invention, the abutting faces of the engagement portions have a complementary, non-linear profile along the faces which, when interengaged, will resist relative longitudinal movement between the tail portion and the main portion.
- 10
- 15

According to a preferred feature of the invention, the engagement portions are formed as an integral part of the respective tail portion and the main portion.

- According to a preferred feature of the invention, the engagement portions are formed as separate elements which are incorporated into the respective edge portion and main portion during formation of the main portion and the tail portion to provide the abutting faces at the interconnection therebetween.
- 20

- According to a preferred feature of the invention, the fastening means is located in the region of said interengagement. According to a preferred feature of the invention, the interengageable faces of the engagement portions are formed at least in part to provide the fastening means. According to a preferred feature of the invention, the fastening means comprises retaining means provided between the engagement portions. According to a further preferred feature of the invention, the retaining means comprises a plurality of spaced retaining means.
- 25

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According to a preferred feature of the invention, the retaining means are provided at the forward end portion of the tail portion and at the rear end portion of the main portion.

According to a further aspect, the invention resides in an engagement means  
5 adapted to provide an interengagement between a main portion and an edge  
portion of a sports board where the edge portion is separable from the main  
portion, the edge portion being engageable with the main portion to prevent  
relative movement between the edge portion and the main portion when  
engaged, the interengagement being able to withstand the forces anticipated to  
10 be exerted between the edge portion and main portion during use of the sports  
board, the engagement means comprising first and second engagement portions  
being capable of said interengagement, the engageable portions being formed  
as separate elements which are incorporated into the edge portion and main  
portion respectively during formation of the main portion and the edge portion to  
15 provide the abutting faces at the interconnection therebetween.

According to a preferred feature of the invention, the engagement portions  
extend along the lengths of abutting faces between the edge portion and the  
main portion when interengaged.

According to a preferred feature of the invention, the abutting faces of the  
20 engagement portions have complementary, non-linear transverse profiles which,  
when interengaged, will resist relative transverse movement between the edge  
portion and the main portion. According to one embodiment, the abutting faces  
have a tongue and groove-like configuration. According to a preferred feature of  
the invention, the abutting faces of the engagement portions have  
25 complementary, non-linear profiles along the faces which, when interengaged,  
will resist relative longitudinal movement between the edge portion and the main  
portion.

According to a preferred feature of the invention, the interengageable faces of  
the engagement portions are formed at least in part to provide a fastening means  
30 adapted to retain the first and second engagement portions in said

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interengagement. According to a preferred feature of the invention, the fastening means comprises retaining means provided between the engagement portions. According to a further preferred feature of the invention, the retaining means comprises a plurality of spaced retaining means.

- 5 According to a preferred feature of the invention, the edge of the main portion which is to receive the second engagement portion is to have a convex profile in plan and the respective engagement portion has a complementary configuration and has two ends, said ends at least being interconnected by a filamentary medium which is to overlie the surface of the main portion when the second
- 10 engagement portion is applied to the main portion. According to a preferred feature of the embodiment, the filamentary medium comprises a membrane. According to a preferred feature of the invention, the filamentary material extends between at least the ends at each side of the intended abutting face of the second engagement portion whereby, on application of the second engagement
- 15 portion to the main portion, the filamentary material overlies both faces of the main portion.

The invention will be more fully understood from the following description of several specific embodiments.

#### **Brief Description of the Drawings**

- 20 Figure 1 is an isometric view of the main portion of a surfboard according to the first embodiment;
- Figures 2 and 3 are exploded isometric views of the rear portion of a surfboard with an edge portion which is to be applied to the main portion of the surfboard in accordance with the first embodiment;
- 25 Figure 4 is an isometric view of the engagement portions according to the embodiment;

Figure 5 is an exploded view of the rear portion of a surfboard and the second engagement element according to the fourth embodiment; and

Figure 6 is an end elevation of the second engagement element according to the fourth embodiment as viewed from the open end of the second engagement element.

#### **Description of Specific Embodiments**

It is a feature of surfboards that the configuration of the tail portion of the surfboard can influence or vary the characteristics of the board. Furthermore, the surfing characteristics of a board will vary depending upon the sea conditions in which the board is being used and the weight of the user and as a surfer increases their skills the operating characteristics required of the board will vary. Each of the embodiments is directed to a surfboard which has a main portion and a removable tail portion which can be replaced by alternative tail portions to provide for a variation in the configuration of the tail of the surfboard. It is an object of the embodiments to enable a user to vary the tail of the board according to at least some of the conditions which are relevant to the board (e.g. sea conditions, weight and skill of the user) without the need to have a different surfboard for each circumstance. This achieved by having a removable tail portion which can be replaced by alternative tail portions of a differing configuration.

In the case of the first embodiment, which is illustrated at Figures 1 to 4 of the accompanying drawings, the surfboard comprises a main portion 11 and at least one removable tail portion 13. The rear end of the main portion of the board is formed with a rear extension 15 having a convex generally V-shaped configuration which is to receive a tail portion 13 having a complementary concave V-shaped configuration whereby the tail portion provides a continuation of the side edges of the surfboard at its rear end. The engagement and retention of the tail portion 13 on the rear extension 15 is effected through abutting faces on the rear extension 15 and tail portion 13 which are profiled such that, when they are interengaged, they will prevent relative transverse movement between



the tail portion 13 and the rear extension 15. The abutting faces are defined by a pair of engagement portions 17 and 19 which are to be engaged with the respective abutting face of the tail portion 13 and rear extension 15 respectively. The engagement portions 17 and 19 are formed of a suitable rigid plastics material. The engagement portion 17 which is applied to the tail portion 13 is formed with a groove 21 along its length and the other engagement portion 19, which is to be applied to the rear extension 15, is formed with a rib 23 along its length, which is of complementary configuration to the groove 21 of the engagement portion 17 in order that the rib 23 can be snugly received in the groove 21. Each engagement portion is intended to be applied to the tail portion 13 and rear extension 15 respectively during manufacture of those components such that they are bonded to the main core of the respective portion. The facing layer of fibre-reinforced plastics which is subsequently applied to the respective portion overlaps the junction between the respective engagement portion and the tail portion and rear extension respectively.

In addition, the second engagement portion 19 is formed at its free ends with flange portions 25 which extend laterally outwardly from the ends and which are intended to abut with the cut away face of the main portion 11 of the surfboard at the junction between the main portion 11 and the rear extension 15.

The engagement portions 17 and 19 are configured such that they will snugly engage with each other and retain the tail portion 13 on the main portion 11 to prevent relative transverse movement therebetween. In order to retain the tail portion 13 in engagement on the main portion 11 and prevent relative longitudinal displacement between the main portion 11 and the tail portion 13, a fastening means is provided between the engagement portions 17 and 19. The fastening means comprises a set of apertures 27, on the first engagement portion 17, which are located at each end and at the central portion of the first engagement portion 17. The fastening means also comprises a second set of apertures 29 located in the rib 23 of the second engagement portion 19 which are located in correspondence with the first set of apertures 27 on the first engagement portion 17. The fastening means further comprises a set of pins or

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like elements 31 which are receivable through the first and second apertures 27 and 29 when aligned. The pins or like elements 31 may be formed as bolts which are threadably engageable with a threaded portion formed on the lower end of the first set of apertures 27 or any other form of pin-like engagement  
5 element.

It is intended that, during the fabrication of a board, the rear end of the main body of the blank from which the board is to be formed will be cut away to provide the rear extension 15. The second engagement portion 19 is to be applied to the cut-away portion to surround the perimeter of the rear extension 15 and is fixed  
10 In position by a suitable adhesive. In addition, the first engagement portion 17 will be applied to a blank tail portion in order that the blank tail portion 13 can be applied to the rear extension 15 of the main portion 11 of the surfboard. The tail portion 13 will then be applied and fixed in the main portion 11 by utilisation of the fastening means and the main portion 11 and tail portion 13 will be shaped to  
15 the desired shape and to provide a continuous surface between the main portion 11 and the tail portion 13 and, in so doing, the flange portions 25 of the second engagement portion 19 are shaped by being cut and/or sanded and/or ground to a shape corresponding to the desired edge of the main portion 11.

Where a number of tail portions of differing shape are to be provided with the  
20 surfboard, each tail portion will be applied to the blank body of the main portion such that the ends of the tail portion which are to abut with the main portion are to be shaped to be substantially continuous with the main portion. Once the desired shapes have been produced for the main portion and the tail portions, appropriate layers of plastic reinforced resin will be applied over the main portion  
25 of the board and each tail portion 13 separately and in accordance with the usual practice. However, such materials will not be applied over the intended abutting faces of the engagement portions. The result will comprise a surfboard having a plurality of tail sections which can be fixedly engaged with the main portion to provide for a surfboard having differing shape characteristics according to the  
30 requirements of the user and the conditions in which the surfboard is to be used.

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According to a second embodiment of the invention, the engagement portions of the main portion and the tail portions are formed as an integral part of the main portion and tail portion.

5 According to a third embodiment of the invention, the second engagement portion of the main portion takes the form of that of the first embodiment and the tail portion is formed as a single item in which the first engagement portion is formed as an integral part of the tail portion.

10 The fourth embodiment of the invention, as shown at Figures 5 and 6, is a variation of the first embodiment in which the second engagement portion 119 of the embodiment is provided with a membrane 133 on its upper and lower face which extends between the side arms of the second engagement portion 119. The membrane is formed of a fibrous material corresponding to that which is utilised in the manufacture of the outer layer of the surfboard and the configuration of the membrane is such that, when the second engagement  
15 portion 119 is applied to the rear extension 115 of the main portion 111, the membranes 133 will snugly overlie the opposed faces of the rear extension 115. On the laying up of the fibre reinforced plastics resin over the main portion 111 of the board including the rear extension 115, the membranes become embodied into the layers provided on the board at the rear end thereof in order to further  
20 positively retain the second engagement portion 119 in position on the rear extension 115.

According to a fifth embodiment of the invention, the fastening means can comprise, at least in part, a set of integral detents and recesses provided between the groove 21 of the first engagement portion 17 and the rib 23 of the  
25 second engagement portion 19 at spaced intervals along their abutting faces. In use, when the corresponding detents and recesses are interengaged, the tail portion 13 is held in positive engagement on the main portion 11. Such fastening means would be provided at the ends of the elongate portions of the engagement portions 17 and 19 and the central portion of the engagement portions at least

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and may be supplemented by a further locking means of the form described in relation to the first embodiment.

The invention has application to alternative methods of manufacturing sports boards as described above.

- 5 In addition, the main portion and edge portion can be retrofitted to a pre-existing sports board rather than provided to the sports board during manufacture.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the  
10 exclusion of any other integer or group of integers.

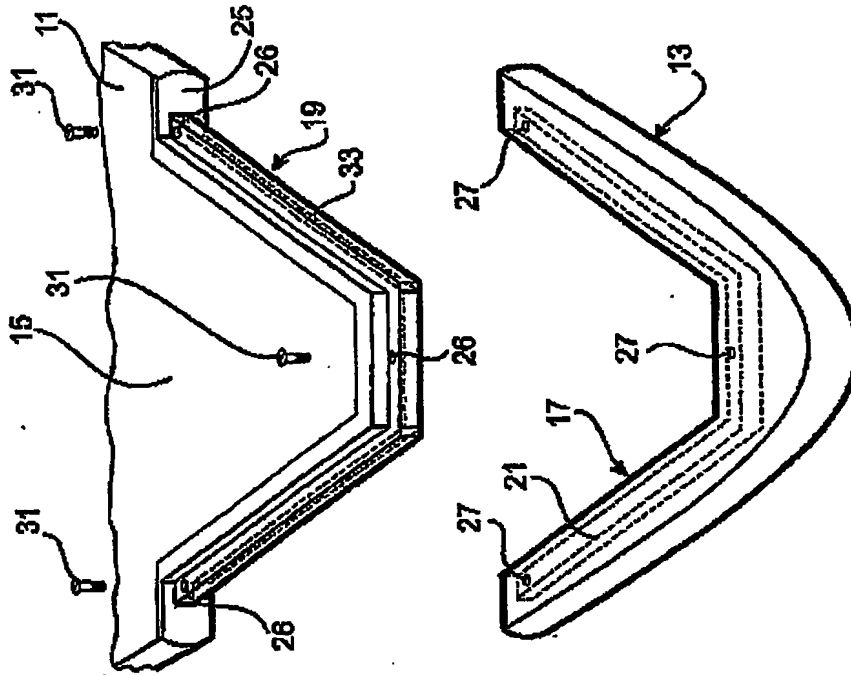
It should be appreciated that the scope of the present invention need not be limited to the particular scope of the embodiments described above.

Dated this SEVENTH day of JULY 2003.

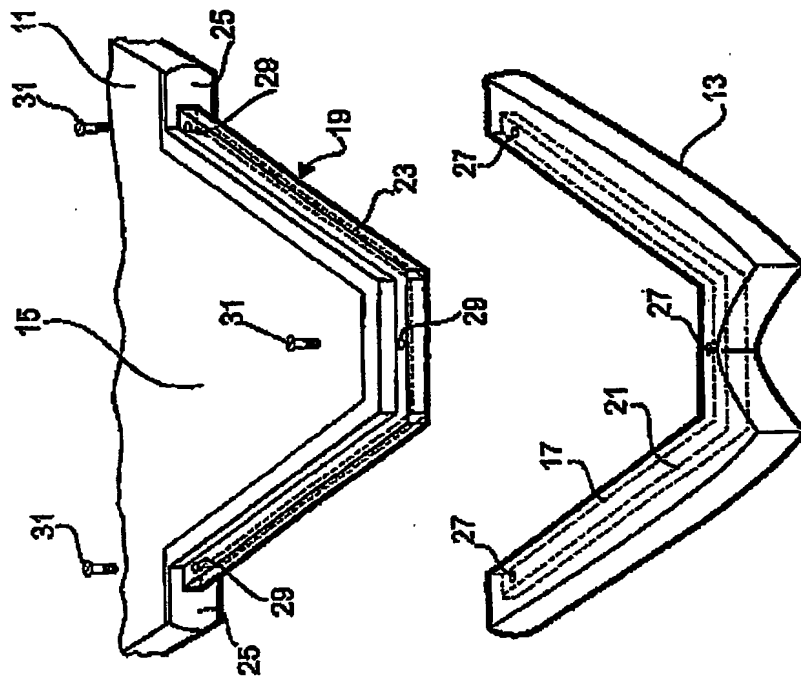
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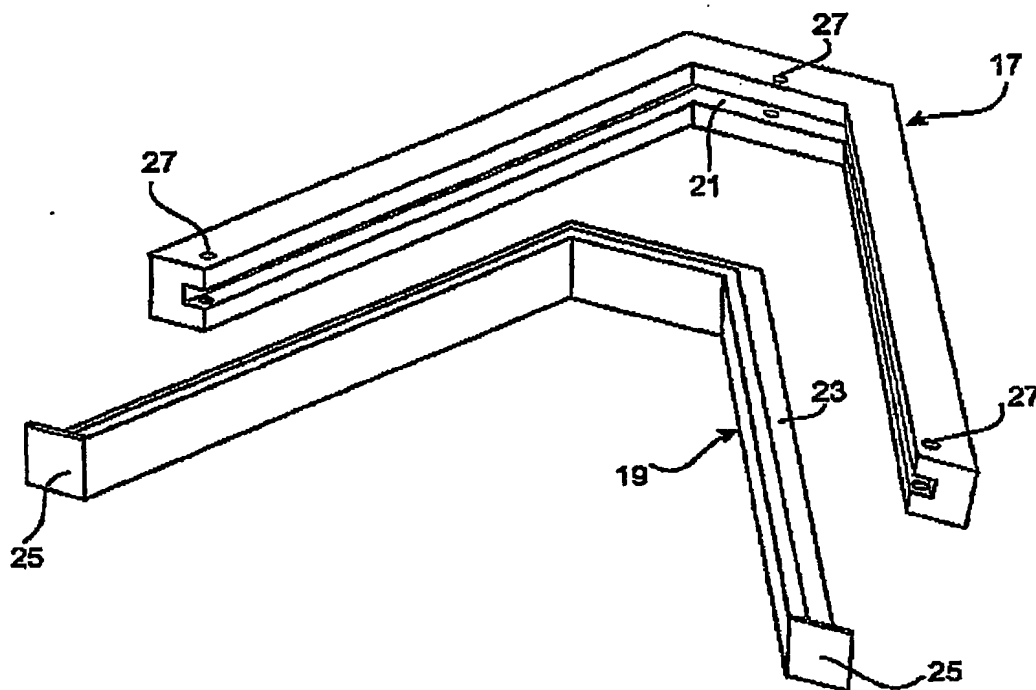




**Fig. 3**

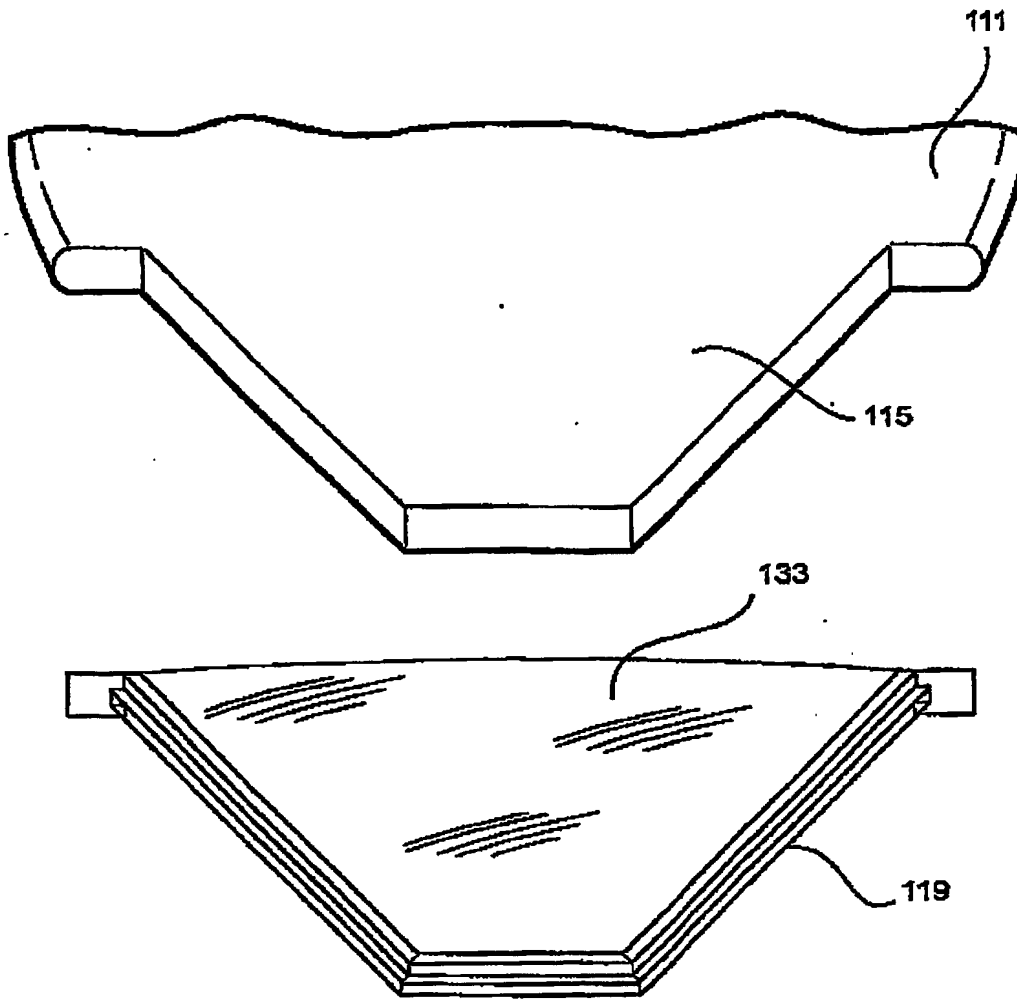


**Fig. 2**



**Fig. 4,**

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**Fig. 5**



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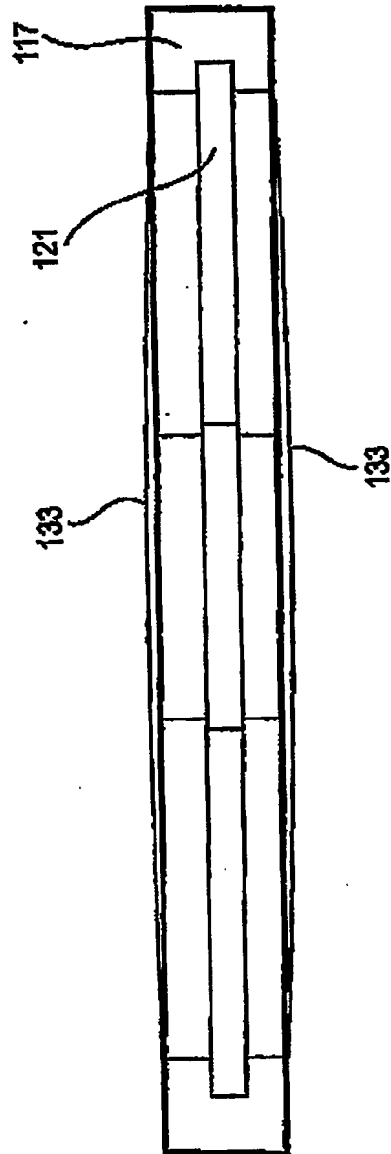


Fig. 6

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